

Claims

- [c1] 1. A weather strip adapted for installation between a closure panel and a body of a vehicle, comprising:
a carrier for mounting the weather strip;
a foundation bulb extending laterally across said carrier, with said foundation bulb having an outer wall supported by a plurality of upstanding symmetrical sidewalls with said sidewalls being integral with a base which is itself integral with said carrier; and
a contactor bulb supported entirely by said foundation bulb, with said contactor bulb having a base which is integral with said outer wall of said foundation bulb and which extends laterally across a portion of said outer wall of said foundation bulb, with said contactor bulb having an outer contact portion for sealingly engaging at least a portion of a closure panel.
- [c2] 2. A weather strip according to Claim 1, wherein said base of said contactor bulb extends across approximately one-third of said outer wall of said foundation bulb.
- [c3] 3. A weather strip according to Claim 1, wherein said outer wall of said foundation bulb is generally convex

when said weather strip is not loaded.

- [c4] 4. A weather strip according to Claim 1, wherein said outer contact portion of said contactor bulb is generally convex when said weather strip is not loaded.
- [c5] 5. A weather strip according to Claim 1, wherein the compliance of said foundation bulb in response to a normally directed load is greater than the compliance of said contactor bulb resulting from said load.
- [c6] 6. weather strip according to Claim 1, wherein the sealing force exerted by said weather strip is generally invariant over a predetermined range of compression distances.
- [c7] 7. A weather strip according to Claim 1, wherein said carrier, said foundation bulb, and said contactor bulb are extruded simultaneously as an integral assembly.
- [c8] 8. A weather strip adapted for installation between a closure panel and a body of a vehicle, comprising:
 - a carrier for mounting said weather strip about the periphery of a door opening in a body of a vehicle;
 - a foundation bulb extending laterally across at least a portion of said carrier, with said foundation bulb extending outwardly from said carrier, and with said foundation bulb having an outer wall supported by a plurality

of upstanding symmetrical sidewalls mounted to a base, with said base being integral with said carrier; and a contactor bulb supported entirely by said foundation bulb, with said contactor bulb having an elevated base which is integral with said outer wall of said foundation bulb and which extends laterally across a portion of said outer wall of said foundation bulb, with said contactor bulb having a form-compliant outer contact portion supported by symmetrical sidewalls extending from said elevated base, with said outer contact portion being adapted to sealingly engage a portion of a closure panel, and with said sidewalls of said foundation bulb being more compliant than said sidewalls of said contactor bulb, such that the configuration of said contactor bulb will remain relatively invariant as said sidewalls of said foundation bulb deform in response to a load imposed by a closure panel and body opening panel.

[c9] 9. A weather strip according to Claim 8, wherein only said form-compliant outer contact portion of said contactor bulb is adapted to engage a closure panel which is closed against said weather strip.

[c10] 10. A weather strip according to Claim 8, wherein said carrier comprises a U-shaped armature having an extruded cover comprising said foundation bulb and said contactor bulb.

- [c11] 11. A weather strip according to Claim 10, wherein said carrier further comprises a plurality of fin seals for engaging and positioning said carrier upon a flange of said door opening panel.
- [c12] 12. A weather strip according to Claim 11, wherein said fin seals being arranged such that said carrier is adapted to be offset toward the interior of a vehicle to which said weather strip is attached.
- [c13] 13. A weather strip according to Claim 10, further comprising an auxiliary seal extending from said carrier in a direction opposed to the direction of extension of said foundation bulb and said contactor bulb, with said auxiliary seal having a sacrificial tear bead for positioning said auxiliary seal during installation of said weather strip.
- [c14] 14. A sealing system for a vehicle, comprising:
an opening panel incorporated within a vehicle;
a closure panel adapted to cooperate with said opening panel to enclose a portion of the vehicle; and
a weather strip attached to a base panel comprising a first one of said opening panel and said closure panel,
with said weather strip comprising:
a non-contacting foundation bulb attached to said base

panel, with said foundation bulb having an outer wall comprising a raised support surface; and
a contactor bulb formed integrally with, and extending from, said raised support surface, with said contactor bulb being supported entirely by said foundation bulb, and with said contactor bulb having a form-compliant outer contact portion for engaging a sealing surface comprising a portion of a second one of said opening panel and said closure panel.

[c15] 15. A sealing system according to Claim 14, wherein said raised support surface of said foundation bulb is supported by compliant, symmetrical sidewalls such that a sealing load imposed upon said form-compliant outer contact portion of said contactor bulb will cause said foundation bulb sidewalls to deform equally, while not changing the configuration of said contactor bulb, so as to allow said form-compliant outer contact portion of said contactor bulb to remain in contact with said second one of said opening panel and said closure panel.

[c16] 16. A sealing system according to Claim 15, wherein each of said sidewalls supporting said raised support surface of said foundation bulb is generally convex.

[c17] 17. A sealing system according to Claim 15, wherein each of said sidewalls supporting said raised support

surface comprises a plurality of links, each having a reduced-thickness region to permit controlled and equal deformation in response to sealing loads.

[c18] 18. A door closure structure adapted for installation between a closure panel and a body of a vehicle, comprising:

a carrier for mounting the door closure structure;
a foundation bulb extending laterally across said carrier, with said foundation bulb having an outer wall supported by a plurality of upstanding symmetrical sidewalls with said sidewalls being integral with a base which is itself integral with said carrier; and
a contactor bulb supported entirely by said foundation bulb, with said contactor bulb having a base which is integral with said outer wall of said foundation bulb and which extends laterally across a portion of said outer wall of said foundation bulb, with said contactor bulb having an outer contact portion for engaging a portion of a closure panel.

[c19] 19. A door closure structure according to Claim 18, with said structure being adapted to be mounted upon a door opening panel, for sealingly engaging substantially the entire periphery of a closure panel.

[c20] 20. A door closure structure according to Claim 18, with

said structure being adapted to resiliently engage a portion of a closure panel.